

Appl. No. 09/974,775
Amdt. dated July 29, 2003
Reply to Office Action of March 31, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A golf ball comprising a syndiotactic 1,2-polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds greater than about 70%.

Claim 2 (original): A golf ball as defined in claim 1, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a crystallinity between about 10% and about 40%.

Claim 3 (original): A golf ball as defined in claim 2, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a crystallinity between about 15% and about 30%.

Claim 4 (original): A golf ball as defined in claim 1, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a mean molecular weight between about 50,000 and about 300,000.

Claim 5 (original): A golf ball as defined in claim 4, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a mean molecular weight between about 80,000 and about 200,000.

Claim 6 (original): A golf ball as defined in claim 5, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a mean molecular weight between about 100,000 and about 150,000.

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Claim 7 (original): A golf ball as defined in claim 1, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a percentage of 1,2-bonds greater than about 80%.

Claim 8 (original): A golf ball as defined in claim 7, wherein the golf ball comprises a syndiotactic 1,2-polybutadiene having a percentage of 1,2-bonds greater than about 90%.

Claim 9 (original): A golf ball as defined in claim 1, further comprising UV stabilizers, photostabilizers, photoinitiators, co-initiators, antioxidants, colorants, dispersants, mold releasing agents, processing aids, inorganic fillers, organic fillers, or mixtures thereof.

Claim 10 (currently amended): A golf ball composition comprising:

a syndiotactic 1,2-polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds of greater than about 70%; and

polymers selected from a group consisting of ionomeric polymers, non-ionomeric polymers, or and mixtures thereof;

wherein the ratio by weight of syndiotactic 1,2-polybutadiene to the ~~ionomeric polymers and non-ionomeric polymers~~ ranges between about 5:90 and about 90:5.

Claim 11 (currently amended): A golf ball composition as defined in claim 10, wherein the ratio by weight of syndiotactic 1,2-polybutadiene to the ~~ionomeric polymers and non-ionomeric polymers~~ ranges between about 10:90 and about 80:20.

Claim 12 (currently amended): A golf ball composition as defined in claim 11, wherein the ratio by weight of syndiotactic 1,2-polybutadiene to the ~~ionomeric polymers and non-ionomeric polymers~~ ranges between about 10:90 and about 70:30.

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Claim 13 (original): A golf ball composition as defined in claim 10, wherein the ionomeric polymers comprise copolymeric polymers, terpolymeric polymers, or mixtures thereof.

Claim 14 (original): A golf ball composition as defined in claim 10, further comprising a crosslinking agent, co-crosslinking agent, crosslinking accelerator, or mixtures thereof.

Claim 15 (currently amended): A golf ball composition as defined in claim 14, wherein the ratio by weight of crosslinking agent to syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomeric~~ the polymers ranges between about 0.1:100 and about 10:100.

Claim 16 (currently amended): A golf ball composition as defined in claim 15, wherein the ratio by weight of crosslinking agent to syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomeric~~ the polymers ranges between about 0.1:100 and about 5:100.

Claim 17 (currently amended): A golf ball composition as defined in claim 14, wherein the ratio by weight of crosslinking accelerator and co-crosslinking agent to syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomeric~~ the polymers ranges between about 0.1:100 and about 20:100.

Claim 18 (currently amended): A golf ball composition as defined in claim 17, wherein the ratio by weight of crosslinking accelerator and co-crosslinking agent to syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomeric~~ the polymers ranges between about 0.1:100 and about 10:100.

Claim 19 (original): A golf ball composition as defined in claim 10, further comprising a copolymer having a glycidyl group, hydroxyl group, maleic anhydride group or carboxylic group.

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Claim 20 (currently amended): A golf ball composition as defined in claim 19, wherein the ratio by weight of copolymer having a glycidyl group, hydroxyl group, maleic anhydride group or carboxylic group to the syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomerict~~ the polymers ranges between about 1:100 and about 20:100.

Claim 21 (currently amended): A golf ball composition as defined in claim 20, wherein the ratio by weight of copolymer having a glycidyl group, hydroxyl group, maleic anhydride group or carboxylic group to the syndiotactic 1,2-polybutadiene, ~~ionomeric polymers and non-ionomerict~~ the polymers ranges between about 1:100 and about 15:100.

Claim 22 (withdrawn): A method for making a golf ball, comprising:

preparing a composition comprising a syndiotactic 1,2, polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds greater than about 70 %; and
incorporating the composition into the golf ball.

Claim 23 (withdrawn): A method as defined in claim 22, wherein the step of preparing a composition comprises a step of dry-blending the composition.

Claim 24 (withdrawn): A method as defined in claim 22, wherein the step of preparing a composition comprises a step of mixing the composition using a mill, internal mixer or extruder.

Claim 25 (withdrawn): A method as defined in claim 24, wherein the step of mixing the composition comprises melting the composition.

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Claim 26 (withdrawn): A method as defined in claim 22, wherein the step of preparing a composition comprises:

preparing a concentrate comprising:

a syndiotactic 1,2, polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds greater than about 70%; and

a crosslinking agent, a crosslinking accelerator, a co-crosslinking agent, a copolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, a terpolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, or mixtures thereof; and

adding the concentrate to a syndiotactic 1,2, polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds greater than about 70%, an ionomeric polymer, a non-ionomeric polymer, or mixtures thereof.

Claim 27 (withdrawn): A method as defined in claim 22, wherein the step of preparing a composition comprises:

preparing a concentrate comprising:

an ionomeric polymer and

a crosslinking agent, a crosslinking accelerator, a co-crosslinking agent, a copolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, a terpolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, or mixtures thereof; and

adding the concentrate to a syndiotactic 1,2, polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about

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350,000, and a percentage of 1,2-bonds greater than about 70 %, an ionomeric polymer, a non-ionomeric polymer, or mixtures thereof.

Claim 28 (withdrawn): A method as defined in claim 22, wherein the step of preparing a composition comprises:

preparing a concentrate comprising:

a non-ionomeric polymer and

a crosslinking agent, a crosslinking accelerator, a co-crosslinking agent, a copolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, a terpolymer having a glycidyl group, a hydroxyl group, a maleic anhydride group, or a carboxylic group, or mixtures thereof; and

adding the concentrate to a syndiotactic 1,2, polybutadiene having a crystallinity between about 5% and about 50%, a mean molecular weight between about 10,000 and about 350,000, and a percentage of 1,2-bonds greater than about 70 %, an ionomeric polymer, a non-ionomeric polymer, or mixtures thereof.

Claim 29 (withdrawn): A method as defined in claim 22, wherein the step of incorporating the composition into a golf ball comprises injection molding the composition to form a spherical layer of the golf ball.

Claim 30 (withdrawn): A method as defined in claim 22, wherein the ball comprises a central portion and the step of incorporating the composition into a golf ball comprises:

injection molding the composition to form a first and a second half shell, the half shells configured to mate to form a spherical layer; and

compression molding the first and second half shells over the central portion to form a spherical layer.

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Claim 31 (withdrawn): A method as defined in claim 22, wherein the step of incorporating the composition into a golf ball comprises incorporating a composition comprising a crosslinking agent, co-crosslinking agent, crosslinking accelerator, or mixtures thereof into the golf ball.

Claim 32 (withdrawn): A method as defined in claim 31, wherein the step of preparing the composition comprises inducing crosslinking in the composition during mixing of the composition.

Claim 33 (withdrawn): A method as defined in claim 31, wherein the step of incorporating the composition into a golf ball comprises inducing crosslinking in the composition by injection molding the composition to form a portion of the golf ball.

Claim 34 (withdrawn): A method as defined in claim 33, wherein the step of inducing crosslinking in the composition by injection molding the composition comprises forming dimples on an outer surface of the portion.

Claim 35 (withdrawn): A method as defined in claim 31, wherein the step of incorporating the composition into a golf ball comprises injection molding the composition to form a portion of the golf ball; and
inducing crosslinking of the composition by compression molding the portion.

Claim 36 (withdrawn): A method as defined in claim 35, wherein the step of inducing crosslinking in the composition during compression molding of the composition comprises forming dimples on an outer surface of the portion.

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Claim 37 (withdrawn): A method as defined in claim 33, wherein the step of incorporating the composition into a golf ball comprises inducing crosslinking in the composition by exposing the composition to radiation of an intensity and type sufficient to induce crosslinking.

Claim 38 (withdrawn): A method as defined in claim 31, wherein the step of incorporating the composition into a golf ball comprises:

injection molding the composition to form two half-shells configured to form a spherical layer when joined together; and

inducing crosslinking in the composition by compression molding the two half-shells to join the half-shells to form a spherical layer of the golf ball.
